

**Abstract**

The present invention is related to analytical platforms and methods performed therewith for generating qualitative and / or quantitative protein expression profiles, in particular differential protein expression profiles, of cell populations comprising:

- generating lysates of one or more populations of cells, the lysates comprising a plurality of proteins expressed by the respective cell populations,
- providing an essentially planar solid support,
- depositing at discrete sites small quantities of the cell lysates, in diluted or undiluted form directly on said solid support or on an adhesion-promoting layer applied on said solid support, thereby creating one or more one- or two-dimensional arrays of discrete measurement areas on said solid support,
- applying a number of binding reagents as specific binding partners for the proteins contained in cell lysates in discrete measurement areas and to be detected and, if adequate, one or more detection reagents on said one or more arrays of measurement areas, the binding reagents and the detection reagents being applied sequentially or in a single addition-step, after binding of the detection reagents to the binding reagents, to the one or more arrays of discrete measurement areas for e.g. global analysis of signalling pathways or screening antibody sets/libraries against protein targets for best specificity, selectivity and affinity, and
- measuring and recording optical signals emanating from said one or more arrays of discrete measurement areas in a locally resolved manner,

wherein said essentially planar solid support is non-porous and an optionally applied adhesion-promoting layer has a thickness of less than 1  $\mu\text{m}$ .